

## PART 1 - GENERAL

### 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 423	(1990; Rev. A) Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
ASTM C 635	(1997) Metal Suspension Systems for Acoustical Tile and Lay- In Panel Ceilings
ASTM C 636	(1996) Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay- In Panels
ASTM C 834	(1995) Latex Sealants
ASTM D 217	(1994) Cone Penetration of Lubricating Grease
ASTM E 84	(1998) Surface Burning Characteristics of Building Materials
ASTM E 119	(1998) Fire Tests of Building Construction and Materials
ASTM E 795	(1993) Mounting Test Specimens During Sound Absorption Tests
ASTM E 1264	(1996) Acoustical Ceiling Products
ASTM E 1414	(1997) Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum

#### FEDERAL SPECIFICATIONS

FS SS-S-118	(Rev. B) Sound Controlling (Acoustical) Tiles and Panels
FS QQ-W-461	(Rev. H) Wire, Steel, Carbon (Round, Bare and Coated)

### 1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

1.2.1 SD- 03, Product Data

- a. Acoustical units
- b. Suspension system

1.2.2 SD- 04, Samples

- a. Acoustical units

1.2.3 SD- 07, Certificates

- a. Fire endurance
- b. Ceiling sound transmission and attenuation class

Test reports by an independent testing laboratory attesting that acoustical ceiling systems meet specified fire endurance and sound transmission requirements.

1.3 DESIGN CRITERIA FOR CEILING SYSTEM

1.3.1 Fire Endurance

The fire endurance (separation) rating of the acoustical ceiling system, including penetrations such as light fixtures and electric boxes, shall be one hour when determined by ASTM E 119. Flame spread of acoustical units shall be 25 or less and smoke development shall be 50 or less when tested in accordance with ASTM E 84.

1.3.2 Ceiling Attenuation Class

The ceiling attenuation class (CAC) of the ceiling system shall be 35 to 39 when determined in accordance with ASTM E 1414. Provide fixture attenuators over light fixtures and other ceiling penetrations, and provide acoustical blanket insulation adjacent to partitions, as required to achieve the specified CAC. Test ceiling shall be continuous at the partition and shall be assembled in the suspension system in the same manner that the ceiling will be installed on the project.

1.3.3 Ceiling Sound Absorption

Determine the NRC in accordance with ASTM C 423 Method of Test.

1.4 DELIVERY AND STORAGE

Deliver acoustical units in the manufacturer's original unopened containers with brand name and type clearly marked. Handle materials carefully and store them under cover in dry, watertight enclosures. Immediately before installation, store acoustical units for not less than 24 hours at the same temperature and relative humidity as the space where they will be installed.

## 1.5 ENVIRONMENTAL CONDITIONS

For 24 hours before, during, and 24 hours after installation of acoustical units, maintain temperature and relative humidity at typical in- service conditions. Interior finish work such as concrete work shall be completed and dry before installation. Mechanical, electrical, and other work above the ceiling line shall be completed and approved prior to the start of acoustical ceiling installation.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Acoustical Units

ASTM E 1264 and FS SS-S 118, with recycled material content of 18 percent minimum, and the following requirements.

##### 2.1.1.1 Composition Lay- In Panels

- a. Type III Non- asbestos mineral composition with factory applied standard washable painted finish. Color white.
- b. Form 1.
- c. Class A, flame spread 25 or less.
- d. Pattern: Textured, light to medium.
- e. Noise Reduction Coefficient (NRC) Grade: Minimum 0.50 – 0.60. Base the tested NRC value on Mounting Type E- 400 of ASTM E 795.
- f. Light Reflectance (LR) Coefficient: LR- 1, 0.75 or greater.
- g. Nominal Size: 24 by 48 inches.
- h. Edge Detail: Square.

### 2.2 SUSPENSION SYSTEM

ASTM C 635 and the following requirements:

- a. Type: Exposed grid for ATC.
- b. Structural Classification: Intermediate.
- c. Finish: Surfaces exposed to view shall be of uniform width and shall be steel with factory applied white, baked enamel finish.
- d. Accessories: Provide manufacturer's standard wall or edge moldings.

#### 2.2.1 Hangers

2.2.1.1 Wires: FS QQ-W-461, composition 1010, soft annealed, light zinc coated finish, 10 gauge.

## 2.3 ACOUSTICAL SEALANT

Synthetic rubber or polymeric-based material complying with ASTM C834 and having the following properties:

- a. Consistency: 290 to 310 per ASTM D217.
- b. Aging: Slightly tacky at 160 degrees F after 50 days.
- c. Accelerated aging: No significant change after 260 hours in weatherometer.
- d. Nonstaining.
- e. Solids content: Approximately 80 to 90 percent.
- f. No oil migration.

## PART 3 - EXECUTION

### 3.1 SURFACE PREPARATION

Examine surfaces to receive acoustical units for unevenness, irregularities, and dampness that would affect quality and execution of the work.

### 3.2 INSTALLATION

#### 3.2.1 Suspended Ceilings: ASTM C 636.

##### 3.2.1.1 Hangers

Space hangers 4 feet on centers each direction. Lay hangers out for each individual room or space. Install additional hangers where required to support framing around beams, ducts, columns, grilles and other penetrations through the ceiling. No hanger wires or other loads shall be suspended from underside of metal deck. Where lighting fixtures are supported from the suspended ceiling system, hangers shall be provided at a minimum of four hangers per fixture and located not more than 6 inches from each corner of each fixture. See Section 16510, "Interior Lighting" for additional lighting installation requirements.

##### 3.2.1.2 Suspension Members

Keep main runners and carrying channels clear of abutting walls and partitions. Provide at least two main runners for each ceiling span.

##### 3.2.1.3 Acoustical Units

Edges of ceiling tiles shall be in close contact with metal supports and in true alignment. Arrange units so that units less than 1/2 width are minimized.

#### 3.2.1.4 Wall or Edge Molding

Install wall molding at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps. Secure molding within 3 inches from ends of each length and not more than 16 inches on center between end fastenings.

#### 3.2.1.5 Hold-Down Clips

Provide hold-down clips for all panels in ceiling system.

#### 3.2.1.6 Caulking

Seal all joints around pipes, ducts or electrical outlets penetrating the ceiling.

### 3.3 CLEANING

Clean soiled or discolored unit surfaces after installation. Touch up scratches, abrasions, voids and other defects in painted surfaces. Remove damaged or improperly installed units and install new materials.

### 3.4 MAINTENANCE MATERIAL (EXTRA STOCK)

Furnish one spare acoustical unit for each 100 units installed.

END OF SECTION